

## METHODS AND SYSTEM FOR CHARACTERIZATION AND MAPPING OF TISSUE LESIONS

### Abstract of the Invention

5           The present invention provides a method and an apparatus for the *in vivo*, non-invasive, early detection of alterations and mapping of the grade of these alterations, caused in the biochemical and/or in the functional characteristics of epithelial tissues during the development of tissue atypias, dysplasias, neoplasias and cancers. The method is based, at least in part, on the simultaneous measurement of the spatial,  
10 temporal and spectral alterations in the characteristics of the light that is re-emitted from the tissue under examination, as a result of a combined tissue excitation with light and special chemical agents. The topical or systematic administration of these agents result in an evanescent contrast enhancement between normal and abnormal areas of tissue. The apparatus enables the capturing of temporally successive imaging in one or more  
15 spectral bands simultaneously. Based on the measured data, the characteristic curves that express the agent-tissue interaction kinetics, as well as numerical parameters derived from these data, are determined in any spatial point of the examined area. Mapping and characterization of the lesion, are based on these parameters.